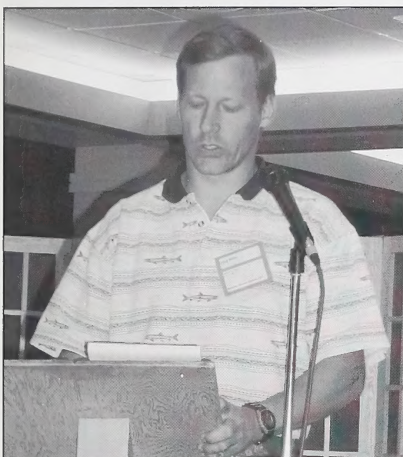


# Aquaculture in Alberta

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## Whirling Disease... Potential for Concern!



Doug Millar of Circle-M Trout Farm, explaining concerns of commercial fish farmers to the whirling disease update participants.

**F**ish stakeholder groups are concerned with the risks of whirling disease, according to participants at a recent Whirling Disease update in Lethbridge, Alberta. This disease has now been identified in Montana waters that are within 100 km of our border. Fortunately, according to our USA counterparts, Albertans have the ability to become pro-active and properly prepared for the day the disease might be discovered. A contingency plan has already been prepared, that identifies emergency measures, quarantines, eradication and control methods.

Whirling disease is a disorder of salmonid fish that includes trout. The most critical age for trout is the first 12 weeks of life. The disease is caused by a microscopic parasite called *Myxobolus cerebralis*. The

parasite becomes infective to fish that feed on tubifex worms or live in close proximity to parasites.

Whirling Disease has caused catastrophic declines in wild trout populations in several trout bearing waters of the western USA. In private and government fish farms severe economic consequences have occurred. In Alberta, nearly 4000 wild salmonid fish have been collected and tested in the past 3 years for Whirling Disease, all results are negative. As well, juvenile rainbow trout (sentinel fish) were held in select southern Alberta rivers during the year 2000. All testing results were negative.

### What can people in Alberta do to reduce the risk of transmitting the parasite?

Never transport fish from infected jurisdictions into Alberta. When traveling from an infected area into Alberta make sure you wash mud off all vehicles and equipment, before entering the province. This includes: waders, boats, trailers and fishing equipment. Even within our boundaries these same precautions should be routine. Also, if cleaning fish, dispose of any entrails and skeletal parts in a landfill, not back into the water or down a garbage disposal (disease spores can remain viable after sewage treatment).

### What can Alberta's private fish farmers do?

Presently, only Alberta raised fish are allowed to be stocked into recreational ponds. All ponds need to

be sound. Ensure pond embankments, screens and barriers remain secure and are sized appropriately. Fish farmers, understandably, want their fish to stay put.

Whirling Disease is a new and serious threat to North America fisheries. Considerable information needs to be learned quickly. A new testing method, with DNA fingerprinting, although costly, is showing great promise as a new diagnostic tool. Albertans are known for their vigilance in eliminating pest problems. Help us keep Whirling Disease out. 🐟

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# 7 Innovative and Useful Marketing Tips for Fish Farmers

**G**et innovative all ye fish farmers!! Assess your current marketing strategies and find a new, more innovative way to **tell and sell the advantage** of what you are producing!! Here are some ideas . . .

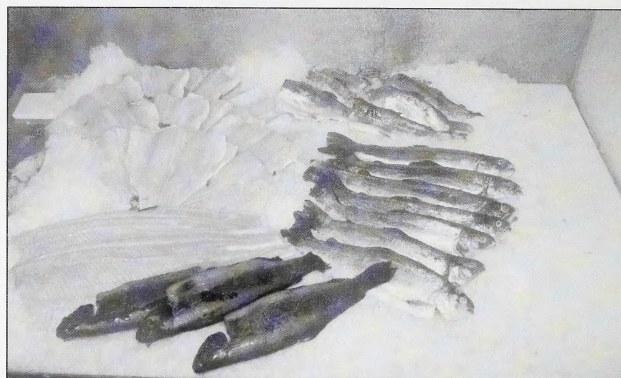
**1. You've heard about fish stories . . .** Telling a story about you will appeal to consumers and entice them to buy from you. A fish is a fish - but a fish with a little story tag, or a website address tells about you, your brand, your care for quality, and becomes a valued part of which product your consumer will purchase.

**2. Ask your customers what they like best.** Assess your customer needs - to know what they want, and be able to modify the product to better fit those needs. Working together with your customer, helps you meet a market need. Some may be looking for a fish to fit a plate, some may be making gourmet rollups!!

**3. Develop an alliance with the independent businesses and players in your value chain!** By collaborating or working toward a common goal, you will discover needs and opportunities, and link together to supply what the market wants. Consumer demands and trends change, and so your cut, or quality management practice can change and respond quickly, as a result of shared information!

**4. Create a unique atmosphere!** Make yourself a "destination" by having a special service (fly tying and real lemonade or put up an educational board about filleting fish). Create atmosphere (build a windscreened "porch by the pond" for the non-fishing partner, or have a "catch 2 and buy 2 more already frozen"). Make it a place people love to come to (build a barbecue pit and have fish fries on Friday evenings).

**5. Form a value added processing unit.** Band together to operate a business unit that adds value to what you produce. Team up with those who, together might better meet a customer need, and as a group have more to offer the particular market sector you are after. (This can be anything from fish wood carvings, custom made fishing rods, to taxidermy, to processed ready-to-eat fish products. Only your will can limit you here.)



**6. Seek out marketing practices that are not the traditional methods you used in the past.** (Has anybody marketed to the Alberta Women's Fly Fishing Association and offered them a destination?) Adapt to market changes by seeking out opportunities in areas that seem to be overwhelming. *Technology is dating Life Sciences* right now, and so a promotional display something like "how you move fresh water constantly through your system to raise an environmentally healthy fish" or some way you are using environmental knowledge and the technical know-how together, opens up lots of ways to advance your "agriculture-aquaculture" industry! Promote your business this way!

**7. Show how your fish business is woven into good health, careful energy use, and environmental best practices.** An economic accelerator will be found where we utilize what we currently have, examine and extract value out of all the parts, and use them for both food, bio-products, and non-food products. Find respected facts about fish, food and nutrition which builds your credibility. Everyone wants quality food from a farmer they trust! 🐟



Jan Warren is a Rural Development Business Specialist from Vulcan, who is presently on project to assist fish farmers develop their businesses and support marketing growth. Jan can be reached at (403) 485-5116 (toll free, if you dial 310-0000).



# Using Barley Straw . . . for Dugout/Pond Algae Control



Tracy Seale holding a bag of barley straw, demonstrated at a northern Alberta dugout.

**Y**es, using barely straw is an environmentally friendly option for reducing algae, one that fish farmers and dugout/pond owners may be interested in. In some places, barley is as abundant as algae, making it an inexpensive alternative when compared to chemical treatment or mechanical control.

Some time ago, barley straw was discovered to have useful qualities for controlling algal growth in ponds. The exact science is still not understood, however, present research indicates a benefit to its usage with proper timing and application.

When barley straw is allowed to rot, processes are created within the pond or dugout that hamper algal growth. Decaying straw does not kill the algae already present, but it prevents new algae from forming. Barley straw is not considered detrimental to fish health or production.

Algae are considered bacteria, capable of fixing nitrogen from the atmosphere. This fixing of nitrogen

combined with the limiting nutrient phosphorus, provided by runoff, allows algae to thrive in a number of Alberta's lakes, ponds and dugouts. Problems associated with algae blooms may include plugged water filters and water intakes, discoloration in water clarity, and foul odors. Algae blooms interfere with fishing, water recreation and can prove lethal by consuming all the oxygen and resulting in fish die off.

The time required for effective algae control varies with type of algae. Small unicellular species can disappear within 6-8 weeks. Larger filamentous algae can survive for longer periods and adequate control may not result in the first season if straw is added late.

Barley straw is only effective under oxygenated conditions. Thus, a square bale of barley is likely packed too tight to work directly. Breaking down the bale into one or more loose portions will allow the straw to properly absorb water and start a thorough rotting process.

Set-up is easy. The material will likely require weights and floats, since the straw will float until water logged. Once water-logged it becomes heavier than water, making removal of large bales quite challenging. Make sure all straw is contained in netting or wire to accommodate complete removal.

**The recommended application rate is 10 g of barley straw for every square meter of water surface (see Algae Control in Ponds, fact sheet 485/716-2 for further info).**

The barley will require at least one month to set up (start rotting), and is generally active for about six months.

To obtain best results, place your barley in the water during spring or fall (you won't want to change the barley during the winter when your pond freezes over).

Place new barley materials in the dugout a month prior to removal of the old straw. This keeps the cycle going with the fresh rotting barley always in your dugout.

Other straw types can be used, however, barley has shown the best results for algae situations.

Method for estimating amount of straw required.

1. Calculate the surface area of your pond or dugout  
ie.  $50 \text{ m} \times 30 \text{ m} (1,500 \text{ m}^2)$
2. Decide on the application rate of straw. Recommend 10 g per  $\text{m}^2$ .
3. Multiply the area of the dugout by the quantity of straw required per  $\text{m}^2$  to obtain the total quantity required.  
ie.  $1,500 \text{ m}^2 \times 10 \text{ g per m}^2$   
 $= 15,000 \text{ g} = 15 \text{ kg}$
4. Calculate the number of square bales. Divide the total weight of straw required by the weight of the bales (a small bale is usually about 20 kg).  
ie.  $15 \text{ kg} / 20 \text{ kg} = 3/4$  of a bale
5. Decide the weight of straw to be placed in each net. (The example below uses 3 kg). Then calculate the number of nets to be made.  
ie.  $15 \text{ kg} / 3 \text{ kg per net} = 5$  nets
6. Decide the appropriate placement of the nets by spacing them out as evenly as possible. The spacing does not need to be exact.

**Stephen Madden, AAFRD  
Agricultural Water Specialist,  
Grande Prairie (780) 538-5606,  
and  
Tracey Seale, AESA Coordinator  
MD of Clear Hills (780) 685-3925**



# Where Do Those Rainbow Trout Eggs Come From, Anyway?

## Alberta's Fish and Wildlife Service Trout Brood Stock Program

**S**urplus trout eggs, produced by the Department of Sustainable Resource Development are available to Alberta's private aquaculture operators. The self-sufficient nature of the provincial program requires that the two government brood trout stations rear sufficient numbers of trout brood stock to ensure the continued genetic diversity of our captive breeders.

Surplus brown trout, eastern brook trout, and rainbow trout eggs are offered for sale to qualified purchasers from November to mid February. Rainbow trout eggs have generated the greatest interest since eyed eggs were first offered for sale in 1997 and are available from both "certified and uncertified" disease free stock.

The Allison Creek Brood Trout Station in the Crowsnest Pass and the Raven Brood Trout Station near Caroline produce the majority of trout eggs for Alberta's trout stocking program. Eggs for the other salmonid stocking programs (Arctic grayling, Cutthroat trout, and Bull trout) are collected from wild spawning operations.

Up until the late 1970's, the provincial government purchased all

rainbow trout eggs from private sector producers in the US. Concerns over the importation of fish diseases with eggs and regular trout egg shortages led to the development of our own brood stock program. Initially, eggs were collected from mature fish and as the effort showed success, egg purchases were phased out. The trout rearing station at Raven was converted to a brood facility in 1980 and the Allison Creek Brood Trout Station was opened in 1982.

The rainbow trout stock at Raven began as eggs imported to Calgary's Sam Livingstone Fish Hatchery from Mt. Lassen Trout Farms located in northern California. The success of the Mt. Lassen strain as a fast grower, excellent survivor, and good sporting fish has led to the continued maintenance of this strain. An experimental enhancement was conducted in the mid 1990's when the Mt. Lassen eggs were crossed with males from natural spawning rainbow trout from Pekisko Creek, a tributary to the Bow River. However, the "pure" strain of Mt. Lassen rainbows were found to have superior characteristics on all counts. The trial cross has now been retired and Raven has returned to the exclusive use of the Mt. Lassen strain.

The Allison station currently uses two distinct strains. In 1985/86, four rainbow trout strains and seven crosses were evaluated for egg production suitability. These stocks originated from: Troutlodge (Oregon), Beity Hatcheries (Washington), Mt. Lassen (California), and Pennask/Beaver Lake (British Columbia). A variety of

strains and crosses were used up until 1989 when the Beity strain (BEBE) and the Beity x Pennask/Beaver Lake (BEBL) had exclusive use. The BEBL strain was back-crossed with the BEBE's in 1990. This strain is still referred to as the Beity x Beaver Lake cross and is used alternately (two year alternation) with the pure Beity rainbow trout strain.

Since the establishment of cultured rainbow trout strains in Alberta, both Raven and Allison use a system of rotational three line crossing to maintain genetic integrity. Laboratory analysis has shown that this system has been successful in maintaining genetic diversity in rainbow trout stocks.

So, that is the origin of the three strains of rainbow trout used in government fish culture operations. What are the origins of the strains of rainbows originally brought into Alberta? Well that is the subject of recollection, opinion, and incomplete records. With some degree of certainty, those strains originated with the Shasta, Arlee, Montana, and Donaldson varieties of rainbow trout in the northwest United States and Beaver Lake in British Columbia. One thing we CAN say for sure is that the rainbow trout is native to the pacific northwest, intermountain, and east slope regions of North America and is now a popular hatchery and sport fish all over the world. Aren't we lucky! 🐟

**Jon Underwood is the station supervisor of Allison Creek Brood Trout Station. He can be reached by phone at (403) 563-3385, or by email to: [jon.underwood@gov.ab.ca](mailto:jon.underwood@gov.ab.ca)**



Allison Creek Brood Trout Station, located in the Crowsnest Pass in southern Alberta.



# Federal Disease Certification . . .

## for Commercial Trout Culture Facilities



A random sample of sixty fish in each lot is the standard testing protocol for federal disease certification.

**A**quaculture facilities in Alberta planning to export live trout and other salmonids to other Canadian provinces must be certified under the Canadian Fish Health Protection Regulations (FHPR). The Department of Fisheries and Oceans Canada (DFO) Fish Health Laboratory in Winnipeg currently undertake this program, with assistance from the Aquaculture Section of Alberta Agriculture Food and Rural Development.

Under the FHPR, newly constructed facilities, with an isolated water supply and starting with fish stock from a certified facility can become certified after their first pathogen free inspection and sample. Any currently operating facilities must pass four consecutive inspections over two years to become certified.

These inspections for certification occur every six months, in spring and fall. To continue being certified, facilities must purchase fish source stock only from other certified facilities and undergo disease testing twice a year. Each lot of fish obtained at different times or from different sources must be randomly sampled. Most of these lots will require a sample size of approximately 60 fish.

The fish are then shipped fresh on ice to be tested for pathogens of concern. These include various viral agents and the agents which cause furunculosis, enteric red mouth disease, whirling disease and *Certomyxa* infections. With an up-to-date Fish Health Certificate a producer can then apply for an import permit through the local Fish Health Officer of the province to which the shipment is going. The same officer can tell you if their

province has additional importation requirements or regulations, for example, Alberta's ban on live salmonid imports.

Besides the ability to export their fish, Alberta trout producers may experience other benefits from being certified under Canadian FHPR. Sales and cooperative rearing can occur with other certified producers within the province. Currently seven fish farmers are either certified or in the process of being certified. An indirect benefit is the enhanced advertising and market potential. Sam Bjornson of Alberta Trout Growers in Tofield recently remarked that "both the recreational fish culturalist and table fish purchaser, when given the choice, will likely purchase from the farmer known to have undergone disease certification." Lorne Loudon of Ackenberry Trout Farm, near Camrose and vice president of the Alberta Fish Farmers Association, reaffirms this observation by commenting that "contracts for research and bioassay fish usually include certification as a requirement."

The cost to the fish farmer of being on this program is only the value of the fish required for sampling. While this is usually insignificant, costs can increase when samples include market sized or even brood-stock sized fish. Farmers should also be aware that housing uncertified fish in their facility, such as the disease tested but non-certified warm water triploid grass carp, will result in the loss of certification. These considerations should be a part of a farmer's long term planning if their business will include raising larger trout or non-salmonid fish.

There is some concern in the fish farming community of loss of fish and income if they are shut down and forced to disinfect as a result of a pathogen found while on such a voluntary program. However, DFO along with the Canadian Food Inspection Agency (CFIA) is currently reviewing procedures for emergency disease eradication and compensation which should deal with these concerns. 🐟



**Dan Watson is a biologist with the Aquaculture Section of Alberta Agriculture, Food & Rural Development. Contact (403) 381-5850 or email: [dan.watson@gov.ab.ca](mailto:dan.watson@gov.ab.ca)**



# Smoky Trout Farm - A New Family Farm Venture for the Menard's



Smoky Trout Farm, managed by Dan Menard and his son Max, is located just 7 km east of Red Deer.

It all started in January of 1998 with a large unused building from a previous poultry operation, an ad in the newspaper for an introductory aquaculture course and a phone call to Eric Hutchings to register. The rest is history.

Dan and Max Menard started Smoky Trout Farm with the idea of going after the table market with fresh, fresh frozen and smoked fish products. "We do sell into the fingerling market with 13 to 30 cm rainbows, but this is more to have a cash flow while we build into the table market."

The next 6 months were a blur. Dan spent the time getting the water license and the paper work done while Max spent his days pulling out all of the cages from the laying barn and cleaning up. The inside of the building was upgraded with paint, foam insulation and metal siding. Their first tanks consisted of the following: two tanks 180 cm by 60 cm deep and one tank 240 cm by 60 cm deep. Each was a self contained system with its own pump and biofiltration. The first fish arrived in October of 1998.


"That winter we added two above

ground swimming pools 360 cm by 90 cm deep, gravel filters to remove solids and a larger biofilter. The first pool liners were far too thin and leaked so we ordered two more heavier liners and they killed the fish because of a UV coating on them. The third set were of fish grade material and worked fine."

They have since taken out the swimming pools and added nine circular fiberglass tanks. A home-built drum filter, rotating biofilters, a fluidized bead filter, oxygen and UV sterilization have also been added. "Our system now holds 100,000 litres and we have the capacity for about 45,000 fish from 5 to 30 cm."

"Over the summer we will be adding ozone and a low head oxygenator (LHO) to the system. We will start work on an artificial wetland as well as a new dugout. Once complete, we will flow water from the system through a small lagoon to the artificial wetland, into the dugout and back into the system. Then there is no wastewater to get rid of, and it will increase the total volume of the system to over 1,250,000 litres. This winter we hope to start work on the remaining 60% of our building by adding a second recirc system with fluidized sand filters, another drum filter and seven raceways holding 220,000 litres."

"From the start we have always thought that the market with the highest growth potential was the table market, and we still believe this to be true. We started selling smoked fish at the Red Deer Farmer's Market even before we had fish in our system, to test the market. This

was done by purchasing fresh trout fillets and then smoking them ourselves. The markets went very well with strong demand for our product. The next year we expanded to the Sylvan Lake and Innisfail markets. Things changed in July of 2000 when the Red Deer Market changed to a public market and a government approved processing facility was required. Since then we have stopped selling smoked fish at all of the markets until a new processing facility is completed. The new facility will have a commercial sized smoker, blast freezer, storage freezer, and an icemaker. We hope to have this processing facility up and running by the end of this year." 



Some fine smoked trout fillets Dan has prepared, using his commercial smoker!

For more information, contact Dan or Max at:

**Smoky Trout Farm  
Red Deer**

**Ph. (403) 342-5206**

**Fax (403) 342-2646**

**email:**

**[rdmenard@telusplanet.net](mailto:rdmenard@telusplanet.net)**



# Alberta Fish Farmers Association

**W**ith minimal runoff and a dry spring throughout most of Alberta, fish farmers are facing new challenges this spring. Our goal, as an association, is to help aquaculture producers grow the industry, make it more stable and to be recognized throughout Alberta and Canada.

The Alberta Fish Farmers Association (AFFA) held their 2001 Annual meeting in Red Deer, on April 21<sup>st</sup>. As a result, a new Board of Directors was put into place, including: Curt McNaughton - president, Lorne Loudon - vice president, Mark McNaughton - secretary/treasurer, and four directors: Dave White, Clay Boyes, Dan Menard, Terry Schroeder.

An AFFA summer conference was held July 12<sup>th</sup> and 13<sup>th</sup> in Red Deer, discussing advancements and new technology with industry members, government officials and interested public. Other topics of discussion included: value adding, marketing, alarm systems, changes affecting the triploid grass carp program and aquaponics.

The AFFA has agreed to assist in the research for new species such as Silver Carp and possibly Bass and Eagle Lake Rainbow Trout. Hats off to the AFFA for having another successful winter with "Raising Fish in Your Dugout or Pond" seminars throughout Alberta. Plans are to continue this program for the upcoming winter.

The AFFA would like to thank those who have supported the association in the past and continue to do so. The Association memberships are available now for only \$10.00, you receive a bumper sticker, and a yearly letter updating you on AFFA meetings, events, and progress on AFFA issues.

The Association is representing you, and if you would like a voice, please contact Mark McNaughton at (403) 368-2172 or fax (403) 368-2174, or any other member to get your membership. 🐟

**Curt McNaughton, President**



## Aquaculture Section Update . . . by D. Lloyd

**Y**ves Bastien, Federal Commissioner for Aquaculture Development has released his Phase 1 recommendations on legislative and regulatory review of aquaculture in Canada. The Commissioner's study began in 1999, and has been a top priority for his office. The thirty-six recommendations contained in the report call for sweeping changes to legislation, government policies and regulations.

The report presents measures that he considers to be urgent and focuses mainly on policies rather than directly on laws and regulations. Bastien suggests that the federal government has a responsibility to create an economic and regulatory environment in which the aquaculture sector can effectively operate, while protecting the broader public interest. Although many of the recommendations pertain to salt water fisheries and have no relevance to Alberta's inland fresh water industry there are lots that do.

His recommendations include:

- adopting a working definition of aquaculture to facilitate decision making with regard to enforcement of existing legislation and regulations
- increasing the duration of licences
- risk management
- finalize and implement a National Introductions and Transfer Code
- finalize amendments to the Fish Health Protection Regulations
- support for the making of regulations under the Health of Animals Act to enable authorization of eradication orders and compensation for diseased aquaculture stocks.

He also suggests the development of a program to facilitate the development and implementation of a program to assist in registration of strategically important therapeutants for aquaculture. Some of the measures should be viewed as temporary until the Commissioner completes Phase Two, or until more profound and longer term modification to the Canadian legal framework for aquaculture is undertaken. AAFRD's aquaculture section's library has copies of the seventy-seven page document and it is available on loan to any one in the province. 🐟

**Duncan Lloyd, Manager of AAFRD's Aquaculture Section, in Lethbridge. Phone: (403) 381-5539**



# COURSES, PUBLICATIONS & EVENTS

## Courses

**R**aising Fish in Your Pond is to be held at 6 Alberta locations during February. These courses are organized by the Alberta Fish Farmers Association. Course locations are Stony Plain, Westlock, Tofield, Wetaskiwin, Airdrie and Lacombe. Contact your nearest AAFRD district office to register.

**"Basic Principles of Aquaculture,"** is a two-day course scheduled for March 2002, by AAFRD in conjunction with the Lethbridge Community College and the Alberta Fish Farmers Association. This introductory course is intended for those interested in pursuing commercial fish culture. It provides an overview of facility design and construction, water quality, feeds, licencing, planning & marketing. A field trip to nearby fish farms is scheduled.

To obtain more information on these courses contact: Eric Hutchings, of AAFRD's Aquaculture Section in Lethbridge, toll free by dialling 310-0000, then 381-5574 or dial direct with area code (403) 381-5574.

## Publications

A selection of aquaculture publications and videos are available on a short-term loan through your local AAFRD office.



Dan Radomske teaching "Basic Principles of Aquaculture" participants about electrifying ponds to reduce great blue heron predation.

Most are maintained with the Aquaculture Section in Lethbridge. The contact person is Judy Lee at (403) 381-5106.

The following fact sheets are available at the AAFRD office near you, or on our Internet website, including:

*Aeration of Dugouts or Ponds with Compressed Air. Agdex 716 (B36)*

*Algae Control in Ponds. Agdex 485/716-2*

*Aquaculture Profit\$ ... for a rainbow trout intensive fingerling enterprise. Agdex 485/821-1*

*Biological Weed Control in Alberta using Triploid Grass Carp. Agdex 485/641-1*

*Constructing Dugouts for Fish. Agdex 485/716-1*

*Fish Culture Licences. Agdex 485/84-1*

*Freshwater Aquaculture Industry. Ag-Venture series Agdex 485/830-1*

*Predator Damage Control. Agdex 485/685-1*

*Screening Your Fish Pond. Agdex 485/87-1*

National Library of Canada  
Bibliothèque nationale du Canada



## Events

**Aquaculture America 2002, San Diego, California,** January 27-30. Contact Aquaculture America 2002, Conference Manager, 2423 Fallbrook Place, Escondido, CA USA 92027. Tel: (760) 432-4270. Fax: (760) 432-4275

**Aquaculture Canada 2002, 19<sup>th</sup> Annual Meeting of the Aquaculture Association of Canada,** 17-20 September, 2002. Delta Prince Edward, Charlottetown, PEI. Theme: Finding solutions, Creating Sustainable Wealth. Tel: (506) 529-4766

**American Fisheries Society 132<sup>nd</sup> Annual Meeting,** 18 - 22 August, 2002 Baltimore, Maryland. Contact Paul Perra, NMFS, 8484 Georgia Ave, Suite 425, Silver Spring MD 20910. Tel: (301) 427-2014  
email: [Paul.Perra@noaa.gov](mailto:Paul.Perra@noaa.gov)

## Editor's Notes

**T**his is the first issue of Aquaculture in Alberta produced for year 2002. If you would like to submit articles, provide us with input, or to be placed on the mailing list, contact the aquaculture section in Lethbridge at (403) 381-5170.

The Internet address for Alberta Agriculture, Food & Rural Development's **"Ropin' the Web"** Home Page is [www.agric.gov.ab.ca](http://www.agric.gov.ab.ca). The home page contains aquaculture information that can be accessed by first clicking on the feature "livestock/animals" and then "aquaculture".

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